CHAPTER 15 AFTER ACTION REVIEW (AAR) MAP LESSON PLAN 15

METHOD:

Conference, demonstration, and practical exercise

TIME ALLOTTED:

5.0 hours

COURSE PRESENTED TO:

- a. Instructors
- b. Unit NCOs
- c. TSC personnel

TOOLS, EQUIPMENT, AND MATERIALS:

See Appendix A

PERSONNEL:

- a. Primary instructor
- b. Assistant instructor

INSTRUCTIONAL AIDS:

- a. TDRS computer unit
- b. Overhead projector
- c. Viewgraphs (Appendix E)

REFERENCES:

- a. TM 9-6920-711-12&P-1
- b. FM 21-26, Chapter 4
- c. Map, Fort Knox Special, Series V7535, Edition 1-DMATC

APPENDICES:

Appendix A. Tools, Equipment, and Materials

Appendix B. Safety

Appendix C. Test Administrative Guide

Appendix D. Practical Exercises

Appendix E. Viewgraphs

15-1. INTRODUCTION.

(5 minutes)

Note. Show Slide 1.

a. **Reason.** The AAR map program used with TWGSS/PGS, provides a tool to evaluate training exercises and individual crew performance. To be able to extract information required to conduct an AAR, the instructor must be able to prepare the AAR and operate the AAR map program.

Note. Show Slide 2.

- b. <u>Training Objective</u>. In a classroom environment, given a TDRS computer unit and TM 9-6920-711-12&P-1, you will perform the following:
 - (1) Operate AAR map controls and indicators.
 - (2) Create a new exercise area.
 - (3) Change existing exercise areas.
 - (4) Evaluate training exercise using AAR map program.
 - (5) Create a grid map exercise area.
- c. <u>Procedures.</u> During this block of instruction we will discuss controls, indicators, and features of the AAR map program. You will be assigned an assistant instructor for the practical exercise portion of this class.

15-2. CONFERENCE/DEMONSTRATION/PRACTICAL EXERCISE. (290 minutes)

- Notes.
- 1. The primary instructor will release the students to their assigned assistant (small group) instructor for the practical exercise portion of this lesson.
- 2. Students must have the AAR map program started.
- 3 Discuss procedures relating to AAR map.
- 4. Show Slide 3.
- a. <u>Controls and Indicators.</u> The map portion of the AAR tool is started by selecting AAR map. The AAR map screen can be divided into four major areas.
 - (1) **Menu bar.** The menu bar is used to access the tools available to create or edit new training exercises and to evaluate completed training exercises.
 - (2) **Command buttons.** The command buttons are used to execute functions relating to TDRS memory card communication and data storage.
 - (3) **Presentation area.** The presentation area displays the selected exercise area and AAR results during training evaluation.
 - (4) **Exercise control toolbar.** The exercise control toolbar provides the instructor with tools used during AAR presentation to crews.

Note. Show Slide 4.

b. **Terminology.**

(1) **Map.** A map is a scanned file of a Government-approved map. A map does not contain any parameters for the global positioning system (GPS).

Note. This data is valid for approximately $5^{\circ} * 5^{\circ}$ sectors of the USA.

- (2) **Conversion parameters.** Conversion parameters contain map, location, and time information used for transferring training exercise data to correct map positions. This data is programmed into the computer for each location using TWGSS/PGS for training.
- (3) **Exercise area.** An exercise area is a map that has all conversion parameters entered into the database. This allows the vehicle position (GPS location) stored on the TDRS memory card to be matched to a map programmed in the computer. An exercise area can also contain information about target types and locations.
- (4) **Chart.** A chart is a paper copy of a map representing the training area. The chart is in universal transverse mercator (UTM) grid format.
- c. <u>Map Coordinates</u>. To position targets, adjust exercise areas, etc., the training instructor must be able to properly read the locations from a map.

Note. Show Slide 5.

(1) **Map Format.** The computer map format is UTM which is very similar to military grids, except UTM maps use figures instead of letters for part of the grid designation.

Note. Show Slide 6.

(2) **Grid coordinates.** Grid coordinates used with the AAR software must be in divisions of 100.000 meter grid squares which is determined at the lower left corner of the map for latitude and longitude. The 100.000 meter grid square enables targets to be programmed on the map with a 1 meter resolution.

Note. Show Slide 7.

(3) **Example of grid coordinate.** The example shows two grid coordinates (longitude and latitude) from Fort Knox. The coordinate values are presented with 100.000, 10.000, 1.000, 10 and 1 meter grid designators. Grid coordinates must be input in the computer as one continuous number without spaces, parentheses, dashes, or decimal points.

Note. Show Slide 8.

d. <u>Creating an Exercise</u>.

(1) **Exercise area database.** Select EXERCISE AREA menu to determine which exercise areas exit in the computer. Three submenus are available to view, create, and edit exercises. Select EXERCISE AREA DATABASE.

Note. Show Slide 9.

- (a) <u>Exercise area database menu</u>. The exercise area database menu displays and modifies the exercise areas available for training using the AAR map feature and the GPS function of TWGSS/PGS.
- (b) <u>Determine exercise areas available</u>. Click on the drop down list box (item 4). Available exercise areas will be presented. If the required exercise area is available, click on it to mark.
- (c) <u>Download exercise area</u>. To download an exercise area into the computer memory, select LOAD SELECTED EXERCISE AREA FROM DATABASE (item 1). This will download the selected exercise area data so that it can be edited into an exercise.
- (d) <u>Delete exercise area</u>. If any of the exercise areas listed are no longer used or have been replaced with newer versions, remove them from the computer by selecting DELETE SELECTED EXERCISE AREA IN DATABASE (item 2).
- (e) Add modified exercise areas. If the map of an exercise area has been modified, the new exercise area can be added as an available exercise area for future exercises. Select SAVE CURRENT EXERCISE AREA IN DATABASE (item 3) to save a modified exercise area in the database.

Note. Show Slide 10.

(2) Adding an exercise area. If the required training area is not available in the database, it can be downloaded using the MAP EDIT menu. This menu allows new maps to be downloaded and modifications to be made to existing maps. If the training location has exercise areas available, it must be determined if the conversion parameters (item 5) are valid for that location.

Notes. 1. Ensure students download a training area from the location to be used.

- 2. Show Slide 11.
 - (a) <u>Conversion parameters</u>. Open an existing exercise area at the required training location. From the CONVERSION PARAMETERS menu, record all parameters programmed for that location.

<u>Notes.</u> 1. The file format for the map must be * .bmp (bit map).

- 2. Show Slide 12.
 - (b) <u>Downloading a new map</u>. If a new training area needs to be added to the database, it is downloaded from a disk containing a scanned map of the training area. Place the disk in the computer A drive and select READ NEW MAP FROM FILE (item 6). A dialog box appears. Select the A drive and file to be downloaded. Click on OK when selections are complete. The map is read into the computer and is displayed in the presentation area. Perform the following:
 - 1. **Select map format.** UTM format must always be selected.
 - 2. Adding conversion parameters. In order for the collected TDRS position data to match the map data, conversion parameters for the training location must be entered into the database together with the map. Conversion parameters can be copied from an existing exercise for the required location. Once this is done, an exercise area is created which has the capability to display TWGSS/PGS targets and moving vehicles. Input data in the order presented.

Note. Show Slide 13.

(c) <u>Save exercise</u>. To save the new exercise area, select EXERCISE AREA DATABASE menu and SAVE CURRENT EXERCISE AREA TO DATABASE. Enter a name for the exercise area (item 7) and select OK (item 9) to save. Select cancel (item 8) to overwrite existing name with new file.

Notes.

- 1. A scale factor larger than 1 will make the map larger. A scale factor between 0 and 1 will make the map smaller.
- 2. Show Slide 14.
 - (d) Resize map. The map must be adjusted to the correct size representing the area used during the training exercise. Select RESIZE MAP (item 11) in the MAP EDIT menu. Mark the upper left lower right corner and select the scale factor. The computer will automatically resize the map.
 - (e) Recolor map. The map can be recolored if necessary by selecting RECOLOR MAP (item 12). This allows new colors to be selected on the map. The entire map will be in the selected color.
 - (f) <u>Scale map</u>. The map must be scaled to enable the computer to determine the size of the map and which section is to be used. Click on SCALE MAP (item 10).

Notes.

1.

- The complete format for longitude and latitude is located in lower left corner of the map. All figures must be used and in meters.
- 2. Longitude values are found on the bottom of the chart.
- 3. Latitude values are found on the left side of the chart.
 - 1. Select two points on the map diagonal from each other. Using a chart of the training area, determine the UTM coordinates for these points.
 - <u>2</u>. Select the Scale map menu. Click on the map at the location of the first point and input the coordinates in UTM format. Repeat for the second point.
 - (g) <u>Save exercise area</u>. An exercise area is created when conversion parameters have been entered and the map has been properly scaled. The exercise area must be added to the database if it is to be used for future training exercises. Save the exercise area to the database.
- (3) **Exercise source data.** The procedures for panel gunnery exercise and force-on-force exercise are different.

Note. Show Slide 15.

- (a) <u>Panel gunnery</u>. Before programming target positions in the computer, determine the position and type of target.
 - 1. **Inspect target position.** Visually inspect each target and ensure that the intended battle positions can be seen from the target. Ensure that the field of view is not obstructed from the battle positions.
 - <u>2</u>. **Determine target position.** Determine position of target using a chart or handheld GPS receiver.
 - 3. **Determine exercise area between battle positions and targets.** This information enables the instructor conducting the AAR to easily determine which targets were engaged by the crew during the training exercise.
 - 4. **Determine position of the battle positions.** This allows the instructor conducting the AAR to transfer actual battle positions to a map position and determine if the appropriate battle positions were used.
- (b) <u>Force-on-force</u>. For a force-on-force exercise, there is no requirement for positioning stationary targets unless the exercise specifically requires it.
- (4) **Position targets on exercise area.** To program targets on an exercise area, select EXERCISE AREA menu and EDIT TARGETS.

Note. Show Slide 16.

- (a) <u>Exercise area name</u>. Verify that correct exercise area is selected (item 13). Select the correct exercise area from the exercise area database as required.
- (b) <u>New target</u>. Select NEW TARGET (item 14) to program a new target on the exercise area. New input fields for the target will appear.
- (c) <u>Target type</u>. Enter target type in the target type box (item 17).
- (d) <u>Target position</u>. Enter longitude and latitude (item 6) in UTM format and meter scale.
- (e) <u>Note</u>. Notes (item 15) can be used to describe the physical position (target pit) on the exercise area. This will assist other instructors using the same exercise to position targets.

Note. Show Slide 17.

- (f) <u>Target symbol</u>. Program the appropriate target symbol (item 18) to be presented during AAR. Target symbol is programmed by selecting TARGET SYMBOL. The target symbol library contains the following:
 - 1. Firing vehicle
 - <u>2</u>. Truck target
 - 3. Infantry target
 - <u>a</u>. Target sizes can be adjusted in width, length, and turret diameter, as applicable. Enter the appropriate size (item 19).
 - b. Press OK (item 20).

Note. Show Slide 18.

- <u>4</u>. Program desired target color by selecting TARGET COLOR (item 21). Select color and click on OK.
- <u>5</u>. Select NEW TARGET (item 22) to input additional targets.
- <u>6</u>. To edit existing targets, select the target from the drop down list box (item 24). This allows for adjustments to the programmed target data.
- 7. To delete targets, select the target from the drop down list box (item 24) and select DELETE TARGET (item 23). The selected target will be removed from the exercise.
- (g) <u>Save the exercise</u>. To save the exercise, select EXERCISE AREA DATABASE and SAVE CURRENT EXERCISE AREA IN DATABASE. A dialog box will appear. Enter a name for the exercise area and click on OK to save.

Note. Show Slide 19.

e. **Edit Existing Exercises.** Follow these steps to create a new exercise from an exiting exercise.

- (1) Select FILE menu and OPEN EXERCISE. Select exercise to be edited.
- (2) Select EDIT TARGET menu.
- (3) Adjust the target scenario as required using the available tools.
- (4) Save new exercise area by selecting EXERCISE AREA and SAVE CURRENT EXERCISE AREA IN DATABASE. Enter a new name for the exercise area and click on OK.

f. AAR Using AAR Map.

- (1) Select exercise area used from EXERCISE AREA DATABASE menu.
- (2) Select multiple cards if several players will be presented during the same AAR. Deselect multiple cards if only one player will be reviewed.

Note. Show Slide 20.

- (3) Insert the TDRS memory card(s) into the computer (one at a time) and select READ LOG for each one. Information from the TDRS memory card is read and stored in the computer. A dialog box appears for each card containing the following selections/information.
 - (a) Vehicle crew (item 25).
 - (b) Vehicle color and symbol (item 26). Adjust as required (item 27).

Note. The vehicle with SHOW EVENTS checkbox checked is the vehicle used as reference for the AAR. The vehicle last checked will be selected automatically by the computer.

(c) Check the SHOW EVENTS checkbox (item 28) if vehicle is to be the main vehicle followed during the AAR. This setting can be changed during the exercise if desired.

Note. Show Slide 21.

- (3) Start AAR by selecting RUN (item 30). Vehicle(s) will be presented on the exercise area map. AAR is performed in real time.
 - (a) The exercise can be stopped by selecting STOP (item 31) and restarted with RESTART (item 32).
 - (b) To advance from event to event, select NEXT (item 33).
 - (c) Click on the control bar (item 29) while in the stopped mode to advance AAR time more rapidly.

Notes. 1. Impact point will not be indicated for the firing system if the TDRS memory card was downloaded with multiple card selected.

- 2. Show Slide 22.
 - (d) Firing results are presented as hits on the panel target type fired upon. Firing results will not be presented if multiple cards have been selected on TDRS memory card. During force-on-force exercises, the target system hit results must be used during AAR.
 - (e) To view detailed firing result information, double click on the displayed result. The following information will be displayed:
 - 1. Ammunition fired
 - 2. Actual range to target
 - <u>3</u>. Crew range selected
 - <u>4</u>. Impact point in azimuth and elevation

Note. Show Slide 23.

- (f) Target system results are presented as impact points on the target silhouette where the round hit. The color of the silhouette depends on target types and programmed vulnerability.
- (g) To view detailed target result information, double click on the displayed result. The following information will be displayed:
 - <u>1</u>. Ammunition impact
 - 2. Impact point in azimuth and elevation
 - 3. Aspect angle of impact

Note. Show Slide 24.

(h) To view vehicle information during AAR, double click on vehicle to display vehicle type (item 34) and vehicle information (item 35). Check the SHOW EVENT checkbox (item 36) to use a new vehicle as a reference vehicle during AAR.

Notes. 1. Have students perform steps involved in creating a grid map.

- 2. Show Slide 25.
- g. <u>Creating a Grid Map</u>. If the exercise areas in the map do not represent the area needed for a training exercise, a grid map may be developed.

- (1) **Conversion parameters.** Open an exercise area from the existing training location in the database. From the CONVERSION PARAMETERS menu, record all parameters programmed for that location.
- (2) **Creating grid map.** Select EXERCISE AREA menu and EDIT MAP. Select CREATE NEW GRID MAP.
 - (a) Set the size of the grid by clicking on two points on the screen.
 - (b) Select the number of grids to be used. Select area and count the number of grids from the center to the edge of the area. Enter this in the input field.
 - (c) Set map format to UTM.
 - (d) Add conversion parameters. In order for the collected TDRS position data to match the map data, information about the training location must be entered into the database together with the map. Once this is done, an exercise area is created which has the capability to display TWGSS/PGS targets and moving vehicles. Input data in the order presented.
- (3) **Scale map.** The map must be scaled to enable the computer to determine the size of the map grids.
 - (a) Select two points on the map diagonal from each other. Using a chart of the training area, determine the UTM coordinates for these points.
 - (b) Select the Scale map menu. Click on the map at the location of the first point and input the coordinates in UTM format. Repeat for the second point.
- (4) **Save new exercise area.** An exercise area is created when all conversion parameters have been entered. The exercise area must be added to the database if it is to be used for future training exercises. To save the new exercise area, select EXERCISE AREA DATABASE and SAVE CURRENT EXERCISE AREA TO DATABASE. Enter a name for the exercise area and click on OK to save.
- (5) **Position targets in grid map.** If required, position targets on grid map using a chart or handheld GPS receiver to determine target positions. Input targets and positions using the EDIT TARGET menu. Save the range under a new name.

Notes.

- 1. Prior to students' arrival, ensure an assistant instructor is assigned to each vehicle training station.
- 2. Direct students to their appropriate training station.
- 3. Each assistant instructor is to conduct a safety briefing for his small group IAW Appendix B.
- 4. Whenever possible, have the students serve as demonstrators during small group instruction. Have one student read the procedures while another student performs the task. To ensure all students get equal hands-on time, rotate the reading and performance responsibilities.
- 5. The assistant instructor discusses and clarifies the procedure as required and reinforces the training objective.
- 6. Using practical exercises (Appendix D), practice TDRS memory card setups.
- 7. Verify practical exercises using vehicle stations.

15-3. TEST. (20 minutes)

See Appendix C.

15-4. FINAL REVIEW.

(5 minutes)

a. Student Questions.

Note. Show Slide 26.

- b. Summary of Main Teaching Points.
 - (1) AAR map controls and indicators
 - (2) Creation of new exercises
 - (3) Changing existing exercises
 - (4) Evaluation of training exercise with AAR map
 - (5) Creation of grid map exercise

Note. Show Slide 27.

c. <u>Closing Statement</u>. This block of instruction has taught you to prepare and evaluate a training exercise with AAR map.

APPENDIX A TO LESSON PLAN 15

AFTER ACTION REVIEW (AAR) MAP

TOOLS, EQUIPMENT, AND MATERIALS

A-1. CLASSROOM STATION.

Listed equipment is one per student, except as noted.

- 1. TDRS computer unit (one per two students)
- 2. TDRS memory card
- 3. Applicable maps (one set per two students)

A-2. VEHICLE STATION.

Listed equipment is one per four students, except as noted.

- 1. M1/M1A1 tank with TWGSS installed, aligned, and LRF eye-safe laser filter (ELF) (installed)
- 2. Boresight panel with retro reflector unit (one per class)
- 3. Training area with a minimum of 1200 m of maneuver space

APPENDIX B TO LESSON PLAN 15

AFTER ACTION REVIEW (AAR) MAP

SAFETY

Listed general safety regulations are to be strictly enforced during the performance of this lesson.

- 1. Mount and dismount tank over left front fender.
- 2. Maintain three points of contact while on top of tank.
- 3. No smoking within 50 m of tank.
- 4. Do not go over or under gun tube.
- 5. Ensure LRF has eye-safe laser filter (ELF) installed and is set to SAFE.
- 6. LASER SAFETY: Do not view transceiver unit with optics from a distance of 25 m or less.
- 7. Ensure proper hearing protection is worn when using pyrotechnics.
- 8. When using pyrotechnics (Hoffman device), ensure area is clear 50 m to the front and 25 m to the sides.
- 9. Ensure gun/turret drive (GTD) switch is set to MANUAL position during installation/removal, alignment, troubleshooting, and before leaving turret.
- 10. Ensure vehicle master power switch is in OFF position before connecting or disconnecting TWGSS cables.
- 11. No cables should be connected or disconnected by untrained personnel.
- 12. Extra care should be taken when power is switched on after TWGSS installation. This is to ensure integration to FCS is correct and secure.

APPENDIX C TO LESSON PLAN 15

AFTER ACTION REVIEW (AAR) MAP

TEST ADMINISTRATIVE GUIDE

C-1. TASK.

Administer test, After Action Review (AAR) Map.

C-2. CONDITIONS.

Given a TDRS computer unit, training area map, and TM 9-6920-711-12&P-1.

C-3. STANDARDS.

The student will <u>correctly</u> create a grid map exercise area on a defined area of the map.

C-4. PERSONNEL, EQUIPMENT, AND MATERIAL REQUIRED.

- a. Evaluator
- b. TDRS computer unit (one per student)
- c. Map of training area to be used for the test (one per student)
- c. 3.5 in. formatted disk (one per student)
- d. Scoring checklist Appendix C (one copy for each student tested)

C-5. TEST PLANNING TIME.

Administrative time: 5 minutes
Test time: 15 minutes
TOTAL TIME (per student): 20 minutes

C-6. OTHER INFORMATION.

Before the student arrives, the evaluator will:

- a. Ensure that each computer is operational and switched OFF.
- b. Ensure that each bench has one TDRS computer unit, map, pen, paper, and TM 9-6920-711-12&P-1.
- c. Have scoring checklist ready for student to be tested.

C-7. INSTRUCTIONS TO STUDENT.

"The purpose of this test is to evaluate your skills in creating a map that can be used for a training exercise. You will have 15 minutes to complete the test. All information needed for the test is available in the test guidelines or on the table in front of you. Your time will start when I announce 'BEGIN' and end when you announce 'FINISHED'. You may use the materials in front of you during the test."

"Do you understand the requirements of this test?" (Answer questions)

[&]quot;You may begin." (Start time)

AFTER ACTION REVIEW (AAR) MAP

Student Guidelines

C-8. TASK.

- a. Create a grid map exercise area to be used for TWGSS/PGS panel gunnery. The training area requires a grid map of 16 squares, each representing 1000 m * 1000 m area. The size of each grid should be approximately 1 in. on the screen.
- b. The lower left corner of the training area is located at these coordinates:

Longitude: 0606000
 Latitude: 3433000.

- c. Location of the gunnery exercise range is Fort Hood.
- d. Position targets at the following specified locations:

<u>Target Number</u>	Target Type	Target Color	Latitude	Longitude
1	Infantry	Red	3433200	0608400
2	T 80 Front	Green	3435600	0607700

- e. Create the exercise and add targets in the training area.
- f. Save the exercise area in the computer as TCPC Range Fort Hood

AFTER ACTION REVIEW (AAR) LIST

Scoring Checklist

NAME		UNIT		
GI	RAD	E DUTY POSITION		
1.	Con	nversion parameters	GO	NO GO
		nversion parameters properly recorded prior to rt of map creation		
2.	Gri	d map		
	a.	Correct command button selected to begin creating map		
	b.	Grid size selected to be approximately 1 in.* 1 in.		
	c.	Correct number of grids selected		
	d.	Map format set to UTM		
	e.	Conversion parameters properly input		
3.	Sca	ıle map		
	a.	Two points on the map properly determined prior to start of scaling map		
	b.	Map properly scaled		
4.	Tar	rgets		
	a.	Infantry target properly input and displayed on screen		
	b.	T80 target properly input and displayed on screen		
5.	Sav	ving exercise		
	Exe	ercise properly saved in exercise area database		

	GO	NO GO	INITIALS
Student satisfactory completed all requirements			_
EVALUATOR	DATE _		
REMARKS			

APPENDIX D TO LESSON PLAN 15

AFTER ACTION REVIEW (AAR) MAP

PRACTICAL EXERCISES

D-1. GUNNERY EXERCISE.

a. You will perform a gunnery exercise on range______ at _____. The gunnery exercise will include four stationary targets and one moving target. The targets will be the following types and at the following locations.

Target <u>Number</u>	Target type	<u>Latitude</u>	Longitude
1	Infantry target		
2	Truck target		
3	T 80 front		
4	T 80 front		
5	Moving tank target		

b. Create the exercise range required to perform the gunnery training exercise.

D-2. GRID MAP EXERCISE.

a. Create a new grid map exercise area for Fort Knox. The training area requires a grid map of 8 squares * 8 squares. The training area is located between 42 00 000 - 42 08 000 longitude and 05 74 000 - 5 82 000 latitude. Position targets at the following grid coordinates:

Target <u>Number</u>	Target Type	Target Color	<u>Latitude</u>	Longitude
1	Infantry target	Red	4205100	05764000
2	Truck target	Blue	4205600	05761000
3	T 80 front	Green	4206000	05755000
4	Infantry target	Red	4205500	05792000
5	T 80 front	Green	4205000	05800000

b. Create the exercise with the targets. Save the exercise area in the computer as TCPC Range Fort Knox.

APPENDIX E TO LESSON PLAN 15

AFTER ACTION REVIEW (AAR) MAP

VIEWGRAPHS